

WHAT IS CLAIMED IS:

1. An isolated CDK4 binding peptide comprising:
Tyr-Ser-Gly-Pro-Pro-Xaa₁-Xaa₂-Xaa₃-Arg-Arg-Xaa₄-Asn-Xaa₅-Tyr-Xaa₆
wherein Xaa₁= Cys or Ser; Xaa₂= Ser or Gly; Xaa₃= Ser, Ala or Pro; Xaa₄=Arg or Gln; Xaa₅= Ser, Cys or Gly; and Xaa₆=Asp or Glu.
2. The isolated CDK4 binding peptide, wherein the isolated peptide does not include a bHLH domain.
3. A fusion protein comprising:
 - (a) a CDK4 binding peptide comprising Tyr-Ser-Gly-Pro-Pro-Xaa₁-Xaa₂-Xaa₃-Arg-Arg-Xaa₄-Asn-Xaa₅-Tyr-Xaa₆ wherein Xaa₁= Cys or Ser; Xaa₂= Ser or Gly; Xaa₃= Ser, Ala or Pro; Xaa₄=Arg or Gln; Xaa₅= Ser, Cys or Gly; and Xaa₆=Asp or Glu; and
 - (b) a heterologous amino acid sequence.
4. The fusion protein of claim 3 wherein the heterologous amino acid sequence comprises a nuclear localization signal.
5. The fusion protein of claim 4 wherein the CDK4 binding peptide is at the C-terminus of the fusion protein.
6. A nucleotide sequence encoding a CDK4 binding peptide, wherein the CDK4 binding peptide comprises:
Tyr-Ser-Gly-Pro-Pro-Xaa₁-Xaa₂-Xaa₃-Arg-Arg-Xaa₄-Asn-Xaa₅-Tyr-Xaa₆
wherein Xaa₁= Cys or Ser; Xaa₂= Ser or Gly; Xaa₃= Ser, Ala or Pro; Xaa₄=Arg or Gln; Xaa₅= Ser, Cys or Gly; and Xaa₆=Asp or Glu.
7. The nucleotide sequence of claim 6, wherein the nucleotide sequence is a DNA sequence.
8. A method of inhibiting cell growth, comprising:
administering to a patient a CDK4 binding peptide comprising:
Tyr-Ser-Gly-Pro-Pro-Xaa₁-Xaa₂-Xaa₃-Arg-Arg-Xaa₄-Asn-Xaa₅-Tyr-Xaa₆

2018964-04102

wherein Xaa₁= Cys or Ser; Xaa₂= Ser or Gly; Xaa₃= Ser, Ala or Pro; Xaa₄=Arg or Gln; Xaa₅= Ser, Cys or Gly; and Xaa₆=Asp or Glu in an amount effective to inhibit cell growth.

9. A method of inhibiting the activity of CDK4 comprising:

contacting CDK4 with a CDK4 binding peptide comprising:

Tyr-Ser-Gly-Pro-Pro-Xaa₁-Xaa₂-Xaa₃-Arg-Arg-Xaa₄-Asn-Xaa₅-Tyr-Xaa₆

wherein Xaa₁= Cys or Ser; Xaa₂= Ser or Gly; Xaa₃= Ser, Ala or Pro; Xaa₄=Arg or Gln; Xaa₅= Ser, Cys or Gly; and Xaa₆=Asp or Glu in an amount effective to inhibit the activity of CDK4.

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